# *ERIOGONUM VILLOSISSIMUM* (POLYGONACEAE: ERIOGONOIDEAE), A NEW SPECIES ENDEMIC TO ACKER ROCK, OREGON

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## ABSTRACT

**Eriogonum villosissimum** (Polygonaceae), a new species restricted to Acker Rock, a near vertical volcanic rock formation in the Western Cascade Range of Douglas Co., southwestern Oregon, is described and illustrated. The new species is a member of subg. *Oligogonum* and is most closely allied to *E. alpinum*, a narrow endemic confined to north-central California.

## RESUMEN

Se describe e ilustra **Eriogonum villosissimum** (Polygonaceae), una nueva especie restringida a Acker Rock, una roca volcánica casi vertical en la Cordillera de las Cascadas occidental del condado de Douglas, en el suroeste de Oregón. La nueva especie es un miembro del subgénero *Oligogonum* y está emparentado con *E. alpinum*, un endemismo confinado al centro-norte de California.

## INTRODUCTION

In 2005, while rock climbing in the Western Cascades of southwestern Oregon, York discovered a previously unknown *Eriogonum* Michx. (Polygonaceae Juss.: Eriogonoideae Arn.) growing in crevices and small shelves of a volcanic rock formation known as Acker Rock. The plants form clumps that are scattered over the south-facing vertical faces of the formation. Nearby outcrops were searched in 2006 with no success of finding another population.

## TAXONOMY

**Eriogonum villosissimum** Reveal & D.A. York, sp. nov. (**Figs. 1–2**). TYPE: UNITED STATES. OREGON. Douglas Co.: Acker Rock, Umpqua National Forest, mainly S of the lookout, 1275 m elev., 528800 E, 4766674 N, Zone 10, 43°03'08"N, 122°38'47"W, T29S, R1E, sec. 13NWNE, 25 Jul 2009, *York et al. 2989* (HOLOTYPE: NY; ISOTYPES: BH, CAS, HSC, OSC, US).

Ab *Eriogono alpino* differt foliis ovatis (nec ovalibus) et villosis (nec tomentosis), stipitibus brevioribus (0.1–0.3 mm, nec 0.5–0.8 mm), et plantis cum numerosis rosulis (nec rosulis solitariis).

**Plants** (Fig. 1) low, spreading, compact herbaceous perennials (0.5–)0.8–2.5(–3) dm across, composed of numerous loosely arranged rosettes of tufted leaves at tips of slender, woody caudex branches arising from a stout taproot. **Leaves** in well defined rosettes; petiole 0.5–1.5 cm long, densely white tomentose and appressed to slightly spreading villous, arising from a broadly elongate triangular petiole base 4–8 mm long, 2–3.5 mm wide, tomentose and villous abaxially, sparsely villous to nearly glabrous or glabrous and tannish brown adaxially; blade mostly ovate, 0.5–1.5 cm long, 0.5–1 cm wide, densely white tomentose and appressed to slightly spreading villous abaxially, greenish white and slightly less densely tomentose adaxially, broadly acute to obtuse but tapering abruptly to the petiole, entire, flat or somewhat or slightly enrolled

marginally, broadly acute to obtuse or occasionally nearly rounded apically; midvein slightly raised and obscured by tomentum. **Flowering stems** (Fig. 2, left) scapose, spreading or somewhat erect, (5–)7–9(–11) cm long, tomentose and spreading villous, becoming thinly so with age, with a whorl of 3 foliaceous bracts about 1/3 up flowering stem; bracts petiolate (0.5–2 mm long) with ovate blades 5–10 mm long, 4–7 mm wide, densely white tomentose abaxially, less so and more villous adaxially; lower stem portion 1–3 cm long; peduncle 3.5–7 cm long. **Involucres** solitary, campanulate, 4.5–7 mm long, 5–8 mm wide, tomentose and densely villous abaxially, glabrous adaxially; teeth 5–8, erect, broadly acute, 0.5–0.9 mm long. **Pedicels** erect to slightly curved with age, 4–6 mm long, glabrous; bractlets linear, 4–6 mm long, villous. **Flowers** (Fig. 2, right) bright yellow, 2.5–5 mm long on a stipe (0.1–)0.2–0.3 mm long, glabrous; tepals monomorphic, oblong-obovate; stamens slightly exserted with 2.5–5 mm long, slightly pilose basally filaments and oval, yellow anthers 0.2–0.3 mm long; pistil with styles 1.5–2 mm long. **Achenes** light brown, narrowly trigonous, 4–5 mm long, glabrous; embryo straight.

Additional material seen. **U.S.A. Oregon. Douglas Co.:** Umpqua National Forest, on the slopes of Acker Rock, 528938 E, 4766230 N, Zone 10, 43°03'01"N, 122°38'41"W, (NAD 27), 1045 m, 28 Sep 2005, *York & Rusch 2899* (HSC); SE side of Acker Rock, 528988 E, 4766416 N, Zone 10, 43°03'06"N, 122°38'39"W, (NAD 27), 1185 m, 9 Aug 2006, *York & Helliwell 2912* (BH, HSC).

*Distribution, habitat, and phenology.—Eriogonum villosissimum* (Acker Rock wild buckwheat) is a rare taxon found in Western Cascade Range physiographic province (Fig. 3), near where it interfaces with the Klamath physiographic province. The area is extremely complex geologically. The only known population occurs on the southwest to southeast exposures of the vertical faces of Acker Rock in the South Umpqua River watershed. The site is 30.5 kilometers due west of the northwest corner of Crater Lake National Park. This formation towers over 600 meters above the surrounding landscape. Acker Rock is located in the older Western Cascade Range and is not capped by younger volcanic material like the High Cascade Range (Kays 1970). It is pyroclastic rock formed between the late Eocene to late Miocene according to Kays who mapped Acker Rock as andesite rhyodacite. Orton (2007) refers to Acker Rock as quartz latite, a specific type of andesite rhyodacite.

The plants thrive in full sun where there is little competition from mosses or other vascular plants. Acker Rock wild buckwheat becomes sparse or completely disappears where the vegetation is dense due to shade or gentler slopes. There appear to be several hundred plants growing on Acker Rock ranging from 975 to 1253 m in elevation. Acker Rock is bordered by forest dominated by Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) and madrone (*Arbutus menziesii* Pursh), with shrubby openings consisting of greenleaf manzanita (*Arctostaphylos patula* Greene), and Fremont silk tassel (*Garrya fremontii* Torr.). Other associates include *Brodiaea elegans* Hoover ssp. *elegans*, *Bromus tectorum* L., *Cheilanthes gracillima* D.C. Eaton, *Elymus elymoides* (Raf.) Swezey, *Eriogonum compositum* Douglas ex Benth., *Eriogonum nudum* Douglas ex Benth., *Holodiscus discolor* (Pursh) Maxim., *Koeleria macrantha* (Ledeb.) Schult., *Lomatium hallii* (S. Watson) J.M. Coult. & Rose, *Luina hypoleuca* Benth., *Penstemon rupicola* (Piper) Howell, *Polystichum imbricans* (D.C. Eaton) D.H. Wagner, *Selaginella wallacei* Hieron., and *Vulpia myuros* (L.) C.C. Gmel.

Flowering occurs from June through August. Although no seedlings have been observed, the authors have seen juvenile plants as young as four or five years old.

*Relationship.—Eriogonum villosissimum* belongs to subg. *Oligogonum* Nutt., a taxon of some 35 species (Reveal 2005) that ranges from Alaska to Mexico and from Virginia and West Virginia to the Pacific coast. While many of the species are widely distributed (e.g., *E. umbellatum* Torr., *E. heracleoides* Nutt., *E. flavum* Nutt.), several have a limited distribution; however, few can match the restricted distributions of *E. villosissimum* and its near relative, *E. alpinum* Engelm. of Scott Mountain, Cory Peak and Mt. Eddy along the Siskiyou and Trinity county line of northern California. The new species may be distinguished by its single involucre with erect teeth atop a stem-like peduncle that is separated from a true aerial stem by a whorl of foliaceous bracts, its glabrous, short-stipitate flowers, villous leaves, stems, peduncles and involucres, and by its branched, matted habit of numerous, loosely arranged rosettes bearing tufts of ovate leaves.

In the subg. *Oligogonum* treatment in *Flora of North America* (Reveal 2005: 331) the new species will key immediately to lead 27:

Fig. 1. Habit of *Eriogonum villosissimum*.

Fig. 2. *Eriogonum villosissimum* – close-up of the habit (left) and detail of flowers (right).

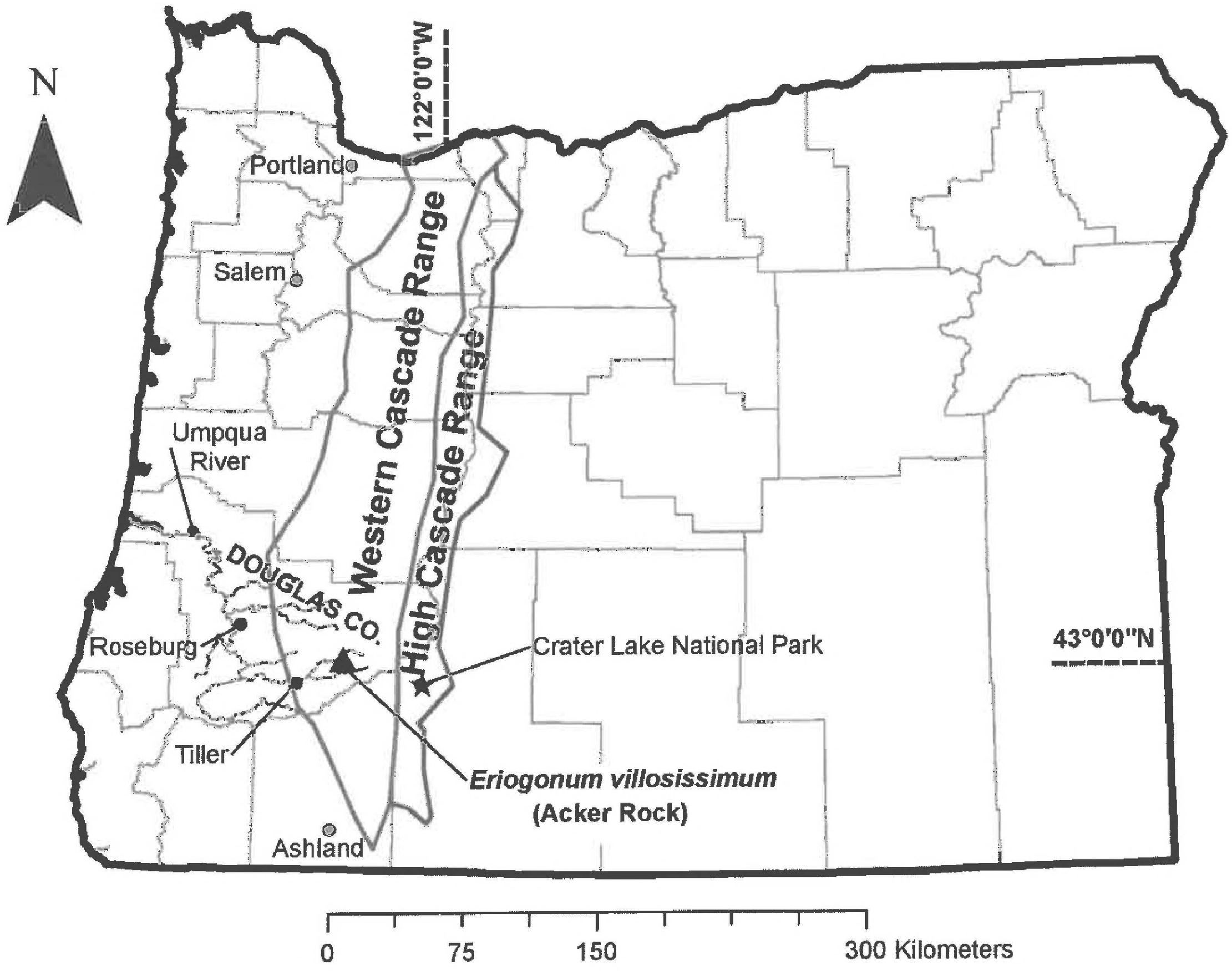


**Fig. 3. Map of Oregon with location.**

27. Perianths sparsely pubescent abaxially; North Coast Ranges, Trinity and Tehama counties, California _____ 112. **Eriogonum libertini**

27. Perianths glabrous abaxially; Cascade Range of Douglas County, Oregon, Mt. Eddy and Scott Mountain, Siskiyou and Trinity counties, California, or Sierra Nevada.
    28. Stipe 1–1.5 mm; leaf blades elliptic to ovate; Sierra Nevada _____ 116. **Eriogonum prattenianum**
    28. Stipe (0.1–)0.2–0.8 mm; leaf blades ovate or oval to round-oval; Cascade Range of Douglas County, Oregon, or Mt. Eddy and Scott Mountain, Siskiyou and Trinity counties, California.
        29. Leaf-blades ovate, densely tomentose and villous; stipe (0.1–)0.2–0.3 mm; Douglas County, Oregon, below 2000 m elev._____139a. **Eriogonum villosissimum**
        29. Leaf-blades oval to round-oval, densely tomentose but not villous; stipe 0.5–0.8 mm; Mt. Eddy and Scott Mountain, Siskiyou and Trinity counties, California, above 2000 m elevation _____140. **Eriogonum alpinum**

*Conservation.*—Acker Rock wild buckwheat, previously unknown and uncollected, is rare due to its lithophytic nature on old volcanic rock. The area is managed by the United States Forest Service as a timber emphasis area. There is an unmanned lookout on Acker Rock available for seasonal use by the public as a rental; it is accessible by way of a short hiking trail through the forest on the northeast side of Acker Rock. Because the *Eriogonum* is confined mainly to nearly vertical rock faces, technical rock climbing is the only way of reaching most of the population. As a preface to his description of the 20 established climbs on Acker Rock, Orton (2007) points out to climbers that the rare buckwheat is "easily avoided while climbing." Anthropogenic impacts are more likely from climbers establishing new routes, a factor that will be critical in

future management decisions. Although seedlings are the most vulnerable to impacts, the seasonal closure (1 January to approximately 15 July) for nesting peregrine falcons on Acker Rock affords some protection during the early growing season.

## ACKNOWLEDGMENTS

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